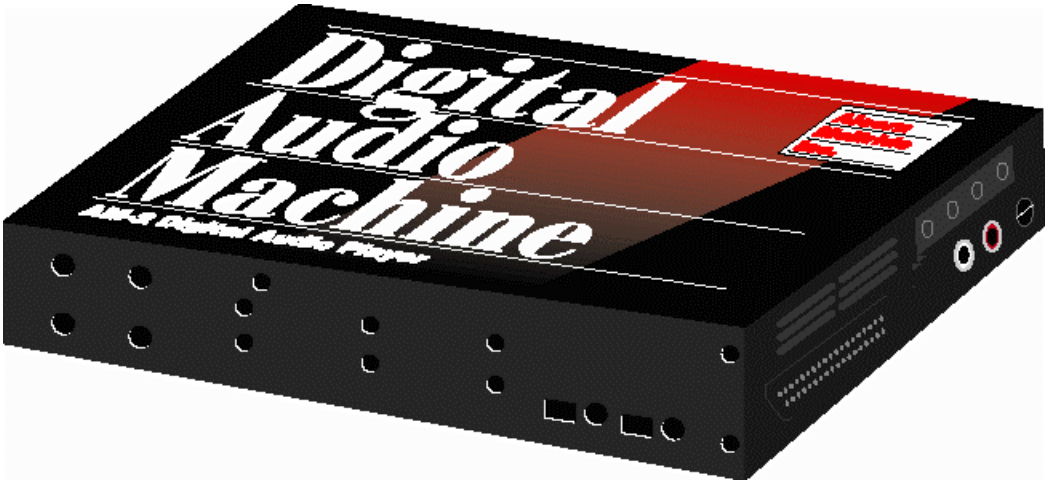
Alcorn McBride Inc.

AM-3



Digital Audio Machine

Hardware and Software Reference Manual

Every effort has been made to assure the accuracy of the information contained in this manual, and the reliability of the Alcorn McBride Digital Audio Machine hardware and software. Errors can sometimes go undetected, however. If you find one, please bring it to our attention so that we can correct it for others. Alcorn McBride welcomes comments and suggestions on the content and layout of its documentation.

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Welcome!

Thanks for purchasing The Alcorn McBride Digital Audio Machine™. The Digital Audio Machine replaces tape machines, CDs and solid state audio players in permanent audio playback installations, providing hours of high-quality, maintenance-free digital audio.

Any 16-bit 44.1 Khz WAV file, stereo or mono, may be played. This format is not compatible with the MPEG Layer-2 Audio format of the Model AM-2. A shareware utility, CoolEdit (available on our website), may be used to convert between the two formats. The 16-bit linear PCM format provides higher quality audio playback than the MPEG format, but consumes about ten times as much storage space per minute. With the falling price of Flash Memory, the incentive for MPEG audio compression has disappeared, and the Digital Audio Machine has been re-cast as a high-performance audio source with the introduction of the AM-3.

Editing your audio files is easy with the software included with your unit. Then just copy the file to a PC-Card, plug it into the Digital Audio Machine, and you're ready to go. You can even transfer files from the PC-Card to the optional internal hard drive to provide hours of playback time.

Where vibration is a concern, Flash Cards are the best choice.

For data storage, the unit provides a socket for installing removable PC-Card (PCMCIA) media, either Flash Card or hard drive.

The Digital Audio Machine can be serially controlled using standard, ASCII-based Pioneer Laser Disc protocol. Parallel control is also possible through the use of contact-closures or voltage inputs.

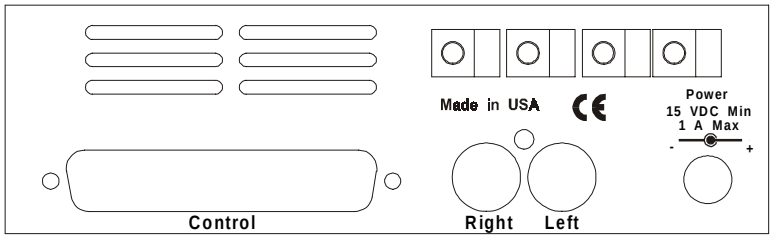
Features

The Digital Audio Machine offers a wide range of features including:

- Plays from PC-Card Storage or internal hard drive.
- Uses Both Flash Cards and PC-Card (PCMCIA) Hard Drives.
- Stores over 500 Tracks.
- Sophisticated Play List Capabilities.
- Serial RS-232 Control is Pioneer LDP compatible.
- Parallel Contact Closures provide push-button control of 15 tracks.
- Audio Editing Software Included.

Controls and Indicators

The Digital Audio Machine provides controls that can accommodate a wide variety of installations. The front panel incorporates a test switch, status indicator, PC-Card slot and serial port. The rear panel provides the audio, digital audio and control connectors:



Test Button

The Test Button always plays the lowest numbered track.

A recessed push-button is located on the front of the unit. This button is used to "test" play the unit and will play the lowest track number on the media.

LED

A dual-color LED located on the front of the unit indicates status.

LED Behavior	LED Meaning
Steady green	Drive access or serial communication activity.
Steady orange	Paused or Waiting.
Flashing red	Fault.
Flashing green	Copying or power-on self test.
Off	Idle.

The LED flashes green during power-up initialization, then glows steadily while initializing the media. Do not attempt to communicate with the unit until the LED goes out.

Ground Lift

Be sure to configure the Digital Audio Machine's switches before rack mounting the units, or the switches may be inaccessible.

In the event of AC hum or noise, this switch, located at the rear of the left side of the Digital Audio Machine, may be opened to isolate the Digital Audio Machine's ground from its chassis.

Voltage / Contact Closure Select Switch

This switch, located on the side of the unit next to the DB-37 Control Connector selects between voltage inputs or contact closures for the discrete controls. More information on these inputs may be found in the section entitled Rear Panel Connectors.

Power

The power input is a 2.5x5.5x10mm barrel connector with center pin (+) and the outer rim (-). The Digital Audio Machine requires 15.0 VDC to 27.0 VDC at 1 Amp. DO NOT EXCEED THE SPECIFIED INPUT VOLTAGE RANGE. An external 115 or 230 VAC power supply is provided with the unit.

If the optional internal IDE drive is not installed, the Digital Audio Machine can be powered from as little as 8 VDC. This is useful for mobile applications where an automotive battery is used to power a Flash Card or PC-Card hard drive.

RS-232C Programming Connector

A serial cable is provided with each Digital Audio Machine.

This input is a standard DB-9 male RS-232C connector, intended to be connected to a PC using a straight-through (not null-modem) 9-pin cable. Usually this connector is used only during programming, and not once the unit is permanently installed. The pinout appears below.

Pin	Function
2	TXD (data from Digital Audio Machine)
3	RXD (data to Digital Audio Machine)
5	GND

For convenience of rack wiring, these signals are duplicated on the rear DB-37 connector. This eliminates the need for front panel cabling in rack mount installations.

Only one serial connection should be attached at a time.

Control Connector

Be sure to configure the Digital Audio Machine for contact closures or voltage inputs before connecting any wires.

This connector provides all of the signals needed to interface to the Digital Audio Machine. In addition to serial control, the first fifteen files of the Digital Audio Machine may be played, paused or stopped using eight parallel inputs located on the rear connector. These inputs may be either contact closures such as momentary buttons, or voltage inputs from a controller such as a PLC. A switch located on the side of the unit next to the connector selects between the two input types. More information on these inputs may be found in the section entitled Parallel Control.

The pinout of the Control Connector is shown below:

Pin	Function	Pin	Function
1	Mute	20	Ground
2	Pause	21	Ground
3	Stop	22	Ground
4	Loop	23	Ground
5	File Select 1	24	Ground
6	File Select 2	25	Ground
7	File Select 4	26	Ground
8	File Select 8	27	Ground
9	Playing Output (contact 1)	28	Playing Output (contact 2)
10	Fault Output (contact 1)	29	Fault Output (contact 2)
11	Mute (voltage input)	30	5 VDC output, 100 ma max.
12	Pause (voltage input)	31	Ground
13	Stop (voltage input)	32	n. c.
14	Loop (voltage input)	33	Ground
15	File Select 1 (voltage input)	34	Input power feedthrough, 100 ma max.
16	File Select 2 (voltage input)	35	Ground
17	File Select 4 (voltage input)	36	RS-232 TXD (from Digital Audio Machine)
18	File Select 8 (voltage input)	37	RS-232 RXD (to Digital Audio Machine)
19	Ground		

Parallel Control

Parallel Inputs

Be sure to configure the slide switch before connecting any wires.

The Digital Audio Machine can be controlled using either contact closures or voltage inputs on the female DB-37 Control Connector. A switch located on the side of the unit next to the connector selects between the two input types. Voltage inputs are rated for 24 VDC. Consult factory for other voltage options. The table below describes the function of each input.

Function	Voltage Input Pins	Contact Closure Pins	Description
Mute	11(+),1(-)	1,20	Ramps the audio to zero volume and maintains it there as long as Mute is asserted. When Mute is released, audio returns to full volume.
Pause	12(+),2(-)	2,21	Pauses the file currently playing. Pause is maintained as long as it is asserted. Play will resume once it is released.
Stop	13(+),3(-)	3,22	Stops the file currently playing. If the file is a Play List, it is aborted.
Loop	14(+),4(-)	4,23	Causes the selected file to loop indefinitely from beginning to end. If the file is a Play List, all tracks will be played and then the file will loop. The state of this input is examined at the *end* of each file.
File Select 1	15(+),5(-)	5,24	Binary-encoded input plays files 1-15.
File Select 2	16(+),6(-)	6,25	Binary-encoded input plays files 1-15.
File Select 4	17(+),7(-)	7,26	Binary-encoded input plays files 1-15.
File Select 8	18(+),8(-)	8,27	Binary-encoded input plays files 1-15.

The binary file select inputs are used to play the first 15 files. These inputs may be contact closures or voltages, depending upon the input select slide switch described in the previous section. The inputs are change sensitive; that is, when a change is detected, the new file will be played. It is therefore important that the four bits change at about the same time.

If the same file number is selected repeatedly it will normally interrupt itself and begin again. When processing a play list, if the Play List is selected repeatedly it advances from entry to entry within the list – unless the “Uninterruptible” flag has been set (see the Play List section for more information).

The table below shows the binary combinations possible, and what file they select:

8	4	2	1	File
Off	Off	Off	Off	None
Off	Off	Off	On	1
Off	Off	On	Off	2
Off	Off	On	On	3
Off	On	Off	Off	4
Off	On	Off	On	5
Off	On	On	Off	6
Off	On	On	On	7
On	Off	Off	Off	8
On	Off	Off	On	9
On	Off	On	Off	10
On	Off	On	On	11
On	On	Off	Off	12
On	On	Off	On	13
On	On	On	Off	14
On	On	On	On	15

For example, connecting pins 8 and 27 together with the slide switch set in the contact closure position will cause file 8 to run.

The loop input is read at the end of the file.

The file will be looped if the loop command is asserted when the file ends. If the file is a Play List, all tracks will be played and then the file will loop.

The file select inputs may also be strapped to automatically play a file on powerup. That file number takes precedence over any autoexec files that may be on the internal or removable drives (see power up operation). If an autoexec file exists and the loop input is strapped, it will play indefinitely.

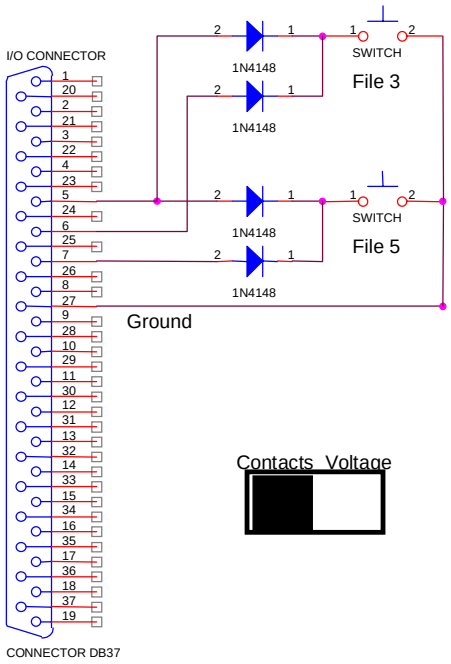
A file on the removable media always takes precedence over the optional internal drive.

When using the file select inputs, files on the removable media take precedence over those on the optional internal drive. In other words, the Digital Audio Machine looks first at the PC-Card slot to see if it is installed. If it is, it looks for the file there. If the PC-Card is not installed or the file doesn't exist on it, then the Digital Audio Machine looks for it on the internal drive. This allows files on the internal drive to be temporarily replaced by simply plugging in a removable drive, a useful feature for advertising insertion or special events.

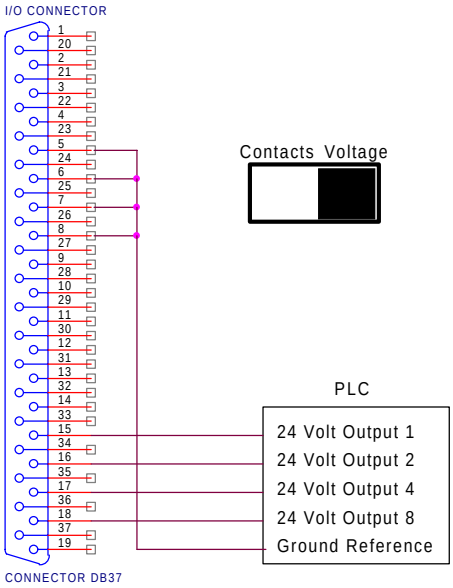
The simplest possible configuration is therefore to connect four switches to the unit's four file select lines. These switches will play files 1, 2, 4 and 8. (The missing file numbers need not exist.) Sixteen switches may be connected without an external controller, by using a diode matrix. One side of each switch is connected to a wire that goes to signal ground. The other sides of the switches are connected through signal diodes, such as a 1N914 or 1N4148, to the file select inputs.

Using a terminal block to hold the diodes makes the wiring neater.

For example, the following circuit allows switches to select files 3 and 5:



Voltage inputs, such as from a PLC, could be wired this way:



Diodes are not needed, since the PLC can actuate any combination of lines desired.

Parallel Outputs

Two status outputs are provided. They are dry contact closures rated at 24 VDC and 0.9 amp max. Their function is described below.

Function	Pins	Description
Playing	9,28	Closed when the unit is playing.
Fault	10,29	Closed when the unit detects a fault condition.

Simple Serial Control

The Digital Audio Machine may be controlled using serial RS-232 messages via either the front DB-9 Programming Connector or the rear DB-37 Control Connector. The programming connector is usually used during one-time setup from a PC, or in a kiosk or other surface mount installation. The DB-37 connector is used in rack mount installations to eliminate wiring to the front panel. The data format is 9600,N,8,1: 9600 baud, 8 bits/byte, no parity, with one stop bit. The protocol is ASCII-based, and many commands are identical to Pioneer Disc protocol. Upper or lower case characters can be used interchangeably.

The most commonly used serial commands are:

Command	Function
Select File	Select a file
Play	Play the selected file
Loop Play	Play the selected file over and over
Pause	Pause at current location. The Play Command resumes playback.

Serial commands are "drive specific". The removable media does not take precedence over the internal drive.

Unlike the parallel file select inputs, serial commands refer to the currently selected media. On power up the Digital Audio Machine defaults to select the internal drive (if installed). In this configuration, refer to the section titled "Advanced Serial Protocol".

The details of these commands are listed below. Many other commands are also possible, and are summarized in the section entitled Advanced Serial Protocol. Unless otherwise noted, all of these commands operate on any type of file, whether audio track or Play List. Throughout the table <CR> means carriage return, a byte with the hexadecimal value 0D.

Select File

Description: This command causes the Digital Audio Machine to select the specified audio track or Play List on the currently selected media. Once this command is sent, the next

Play command causes the specified file to play from the beginning. The unit defaults to file #1 at power-up, unless an autoexec file exists. When receiving this command, the Digital Audio Machine always looks for the file on the currently selected drive.

Command Bytes: nSE<CR> or nnSE<CR> or nnnSE<CR>
where n, nn, or nnn is the file number in ASCII.

Message Response: R<CR>

Comments: This is similar to the "Search to Address" command in chapter addressing mode used in Pioneer Laser Disc protocol. The maximum file number is 511.

Examples: Select file 215. 215SE<CR>
Select file 4. 4SE<CR>

Play

Description: This command causes the Digital Audio Machine to play the file which was specified with the "Select File" command. If a track is paused, this command resumes play. If this command is issued while a Play List is being played, the Digital Audio Machine will skip to the next track in the Play List and play it. This command sends a response when it is executed, and another when the playback is complete.

Command bytes: PL<CR>

Message Response: R<CR>

Completion Response: <CR>

Loop Play

Description: This command causes the Digital Audio Machine to play the file specified by the Select File command and loop back to the beginning. If the file is a Play List, all of the tracks in the Play List will be played and then the entire Play List will be restarted.

Command bytes: LP<CR>

Message Response: R<CR>

Pause

Description: This command causes the Digital Audio Machine to pause. Play will resume from where it left off whenever another Play command is issued unless a Select File command is issued, in which case the new file will play from the beginning.

Command bytes: PA<CR>

Message Response: R<CR>

Comments: If a Select File command is issued while in Pause mode, playback will start from the beginning of the selected file whenever another Play command is issued.

Reset

Description: This command causes the Digital Audio Machine to stop, just as if the parallel Stop input had been activated.

Command bytes: RJ<CR>

Message Response: R<CR>

File Names

File names are represented in simple DOS 8.3 format – in other words, an eight character name, a period, and then a three character extension. The name is made up of eight characters specifying the type (SND for sound file, PLY for Play List, CMD for command), and the number of the file (5 digits from 00000 to 00511). The three character extension is used to tell the Digital Audio Machine the data format of the file.

The Digital Audio Machine AM-3 supports WAV files which contain 16-bit mono or stereo linear PCM data sampled at 44.1 KHz. This format is not compatible with the MPEG Layer-2 Audio format of the Model AM-2. A shareware utility, CoolEdit (available on our website), may be used to convert between the two formats. The 16-bit linear PCM format provides higher quality audio playback than the MPEG format, but consumes about ten times as much storage space per minute. With the falling price of Flash Memory, the incentive for MPEG audio compression has disappeared, and the Digital Audio Machine has been re-cast as a high-performance audio source with the introduction of the AM-3.

Any type of file may be stored in the Digital Audio Machine, but only those listed in the table may be played.

Although any file name may be copied to the Digital Audio Machine's media, only .WAV file formats may be played back. This allows archiving of ANY information on the drive: CAD drawings, spreadsheets, documentation, etc. Some example file names:

File Name	Description
SND00020.WAV	Track number 20 Audio file
PLY00002.LST	Play List Number 2

To avoid confusion, don't duplicate file numbers.

File numbers are used to identify which file is to be played in response to Select File serial commands or rear panel file selection parallel inputs. File numbers contained on a drive should be unique, regardless of the file type. In other words, you shouldn't have PLY00002.LST and SND00002.WAV on the same drive. The two files should have different numbers. If more than one file has the same number, the first file found in the directory will be used.

Autoexec files are invaluable in stand-alone applications.

File 00000 is an autoexec file. A file numbered 00000 is automatically executed on power up. For example, Play List PLY00000.LST will start as soon as the Digital Audio Machine is turned on. If the loop input is strapped on, or if the Play List is designed to repeat, playback will continue indefinitely.

Important Note: When using a PC to copy your audio files to the media, avoid copying files after performing delete operations. This will cause the media to become fragmented and the Audio Machine will malfunction during playback. Always format the media in the Audio Machine first, and then copy files to it all at once.

Play Lists

Play Lists provide a mechanism for the Digital Audio Machine to automatically play a collection of tracks in a predefined sequence. Play Lists often allow the Digital Audio Machine to be used to perform complex functions that would normally require an external controller. Play Lists can perform functions as simple as looping a single track, or as complex as user prompted pacing of the playback.

Overview

Play Lists hold the key to the power of the Digital Audio Machine.

A Play List file contains a list of numbers which refer to audio tracks (or other Play Lists) on the media in the Digital Audio Machine. When a Play List is being used, the tracks are played back in the order in which they appear in the list. The Play List is an ASCII text file and can be made using any ASCII editor. (In the future, Play Lists will be constructed by selecting files from the Digital Audio Machine program's file list). The maximum Play List file size is 64 KBytes (or about 16,000 tracks, if no comments are used).

A Play List can be started by serial or parallel commands, in exactly the same way as an audio track. For example, the serial message

2SE<CR>PL<CR>

causes Play List PLY00002.LST on the currently selected drive to start. Discrete File Select Input 2 will also start PLY00002.LST , looking first on the removable media, then the internal drive.

If Play List 0 (PLY00000.LST) exists, it will be automatically executed on power up.

If a Play List contains the number of another Play List, execution of the first Play List will be terminated at that point, and the new Play List will begin.

A Play List with a .RND extension will cause the Audio Machine to randomly select clips from the list for play.

Play List Command Summary

The Play List is mainly a list of the track numbers that are to be played. If the same file number exists on both the internal and removable media, the removable media takes precedence. Track numbers are entered as one to three ASCII digits, and are separated by any "white space" characters or punctuation (other than the command characters listed below).

Special command characters further modify the behavior of the Digital Audio Machine. These characters are:

Char	Meaning
L	Loop next track. The track loops until the Resume input is activated or a serial play command is received, whereupon the next entry in the Play List is played.
W	Wait. Play stops at the end of current track until the Resume input is activated or a serial play command is received, whereupon the next entry in the Play List is played.
U	Uninterruptible. Causes the Digital Audio Machine to ignore the Resume input and serial Play command while playing. It still processes them when waiting, paused or stilled.
I	Interruptible. Allows the Resume input or serial Play command to skip to the next track. This is the power-up default.
<	Repeat entire Play List. The only way to stop the Play List from looping is to use the Stop input or serial command, or to start another file. Anything in the Play List after the '<' character is ignored.
;	Comment. Ignore all characters until the next carriage return.

Commands may be entered into the Play List in either upper or lower case. All text following a semicolon (;) is interpreted as comments, until the next carriage return. You may put anything you want in comments, including the special command characters normally used in the Play List.

File Select inputs and serial Play command change functions when using a Play List.

When the Digital Audio Machine is processing a Play List, reactivating the same File Select inputs or sending the serial play command take on different meanings, depending upon whether the unit is playing, paused, or waiting. Here is how they behave:

Mode	Interruptible	Uninterruptible
Playing	Immediately play next file	Ignored
Paused	Resume play	Resume play
Waiting	Play next file	Play next file

Asserting and releasing the Pause input while the unit is in the Waiting state of a Play List will also resume play.

One thing to be cautious of is the unintended endless loop. For example, if a Play List contains a U followed by an L command, it doesn't matter how many more tracks may occur in it, there is no way to get to them! When using the U command, always include an I command before the next L, unless this is the desired behavior. Of course, you can always terminate the loop with a stop command, or by selecting a different file.

Play Lists may contain references to other Play Lists, but as soon as such a reference is encountered the new Play List begins execution, and the old one is abandoned.

Example Play List

```
i,1,L6,37,w,415,5,60 <
```

The Play List is a list of numbers representing the file numbers of audio tracks. The list can also contain special control codes or symbols to govern playback. The list can be arranged all on the same line, as shown above, or vertically as shown below.

```
i
1     ;You can comment your Play List file by using
L6    ;semicolons.  All text after a semicolon is
37    ;ignored until the end of the line where a
w     ;carriage return is encountered.
5
60
<
```

The "i" character places the Digital Audio Machine into "interruptible" mode, which means that the unit will respond to discrete Select inputs and serial play commands by jumping immediately to the next entry in the list. The unit remains in interruptible mode until a "u" character is encountered, which in this example is never - the entire list is interruptible.

Track numbers may be 1, 2 or 3 digits long. Leading zeroes are ignored.

Next, the unit plays track #1 on the removable media, unless it cannot find a track #1 there, in which case it plays track #1 on the internal hard drive (when installed). This track will be interrupted by track #6 if the user issues a new Play command.

When track #1 is done, the unit loops track #6 continuously until the user issues a Play command.

Then, track #37 plays. When the track is complete, the "w" causes the Digital Audio Machine to wait for another Resume input or Play command.

The unit continues straight into track #5 followed by track #60, at which point the list loops back to the beginning, continuing straight into track #1.

Power Up Operation

The order of power up execution allows the Digital Audio Machine to use the removable drive to update itself, either temporarily or permanently.

When power is first applied to the Digital Audio Machine, it flashes the front panel LED green while performing a self test. It then checks to see if a track or Play List should be played, according to the following priority:

- If the test button is depressed, process command file COMMAND0.BAT on the removable media.
- Play any track or Play List that is hardwired at the Control Connector.
- Play track or Play List number 0 from the removable drive.
- Play track or Play List 0 from the internal drive.

The first condition detected will be processed. Successive conditions are ignored. If more than one file has the same number, the first file found will be used.

Command Files

Command files are used only in units equipped with the optional internal drive.

To permanently update the contents of the internal drive from the PC-Card slot, use a Command File.

Command Files are a simple yet powerful way to automatically update the contents of one or many Digital Audio Machines in the field, without using a laptop or other external device. Just insert an appropriately prepared PC-Card and the Digital Audio Machine updates itself. Here's how it works:

Command files are only processed if the test button is depressed on power up or when the removable media is changed.

If the test button is depressed when power is first applied to the Digital Audio Machine or when the removable media is changed, the Digital Audio Machine checks for the presence of a command file named COMMAND0.BAT on the removable media. If found, this file will be processed. Currently the command file supports only the inclusion of an update all command, of the form:

*U

If these characters appear at the beginning of the file, the Digital Audio Machine will automatically search for and delete any file numbers on the internal drive that match those on the external drive. It then compacts the internal drive, and copies all files (except COMMAND0.BAT) from the removable drive to the internal drive.

The LED blinks during the entire update process. Once the LED is extinguished it is safe to remove the PC-Card.

Advanced Serial Protocol

The table below shows the complete Digital Audio Machine serial protocol, including the Pioneer LDP compatible commands and our extensions. Using these commands, an external controller or PC can accomplish extremely complex tasks. Throughout the following table <CR> means carriage return, a byte with the hexadecimal value of 0D.

Description	Command Bytes	Response	Comments
Play	PL<CR>	R<CR> upon receipt <CR> upon completion	Automatically stops at end of track
Pause	PA<CR>	R<CR>	
Select File	nSE<CR> nnSE<CR> nnnSE<CR>	R<CR>	Only file number addressing is supported (not frames or time)
Audio Control	nAD<CR>	R<CR>	0=Mute 1=Unmute
Play and loop at end of file	LP<CR>	R<CR>	
Select Drive	nSL<CR>	R<CR>	0=internal, 1=Removable
Drive Directory Request	?D<CR>	ASCII dump	

Delete File	"xxxxxxxx.xxx"DL<CR>	R<CR> upon receipt R<CR> upon completion	
Rename File	"xxxxxxxx.xxx" "yyyyyyyy.yyy"RN<CR>	R<CR> upon receipt R<CR> upon completion	
Copy File, Removable to Internal	"xxxxxxxx.xxx"CI<CR>	R<CR> upon receipt R<CR> upon completion	
Copy File, Internal to Removable	"xxxxxxxx.xxx"CR<CR>	R<CR> upon receipt R<CR> upon completion	
Format Drive	FO<CR>	R<CR> upon receipt R<CR> upon completion	
Total Storage Request	?TS<CR>	nnnnnnn<CR>	number of bytes (hex)
Firmware Version Request	?V<CR>	ASCII dump	

Notes:
In the commands above, xxxxxxxx.xxx and yyyyyyyy.yyy are file names.
All R<CR> responses can be replaced by Enn<CR> if an error occurs (see below).
The Digital Audio Machine responds to the Play command with R<CR> when received, and an additional <CR> when the track ends. This maintains Pioneer command compatibility while providing completion information.

The Digital Audio Machine returns the following error codes:

Error Code	**Description**
E00	Communication Error
E04	Feature Not Available Yet
E11	Media Not Present
E12	Search Error
E20	Drive Not Formatted

Troubleshooting Guide

Q: I've copied several files from my PC onto a PCMCIA drive, but they do not appear in DVM Explorer.

A: The PCMCIA drive may have been pre-formatted in a way which is incompatible with the AM-3 operating system. Use DVM Explorer to format the media, and then re-copy the files.

Q: DVM Explorer shows a red circle in front of the file name. What does this mean?

A: The file name does not follow the naming conventions outlined in this manual for video files. It may not be a valid video file.

Q: I have several files on my AM-3. When I try to play one of them using DVM Explorer, a different file plays.

A: All file names and numbers must be unique. You cannot have, for instance, two files named SND00005.WAV, or have a file named SND00003.WAV along with a PLY00003.LST.

Q: I have created a playlist using Windows 95, but it doesn't work on the AM-3.

A: Windows 95 sometimes uses its own extensions, or adds extensions that are hidden when viewed in Windows Explorer. Try using a DOS shell, and renaming the file, or use a DOS editor.

Q: When using DVM Explorer on a Windows NT machine, communication with the AM-3 is intermittent, or the program crashes.

A: DVM Explorer is designed to operate with Windows 95 only. It has not been certified for use on NT machines.

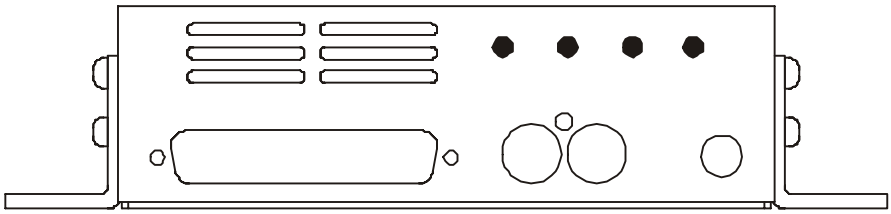
Q: When playing back files, the audio seems to jump from one file to the next, interrupting the currently playing file in the middle.

A: The media has become fragmented. Format the media in the AM-3 and them re-copy all the files to it.

Mechanical Information

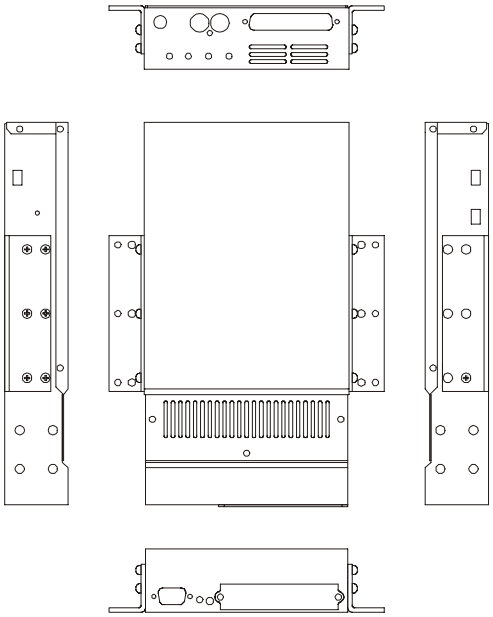
Strain Relief

The rear panel of the Digital Audio Machine incorporates four threaded PEM nuts,



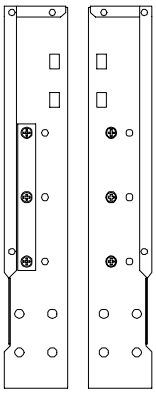
which can be used to secure strain reliefs to prevent cables from being dislodged from their connectors. The PEM nuts accept 4-40 screws, with a length not to exceed 3/8 inches.

Surface Mounting

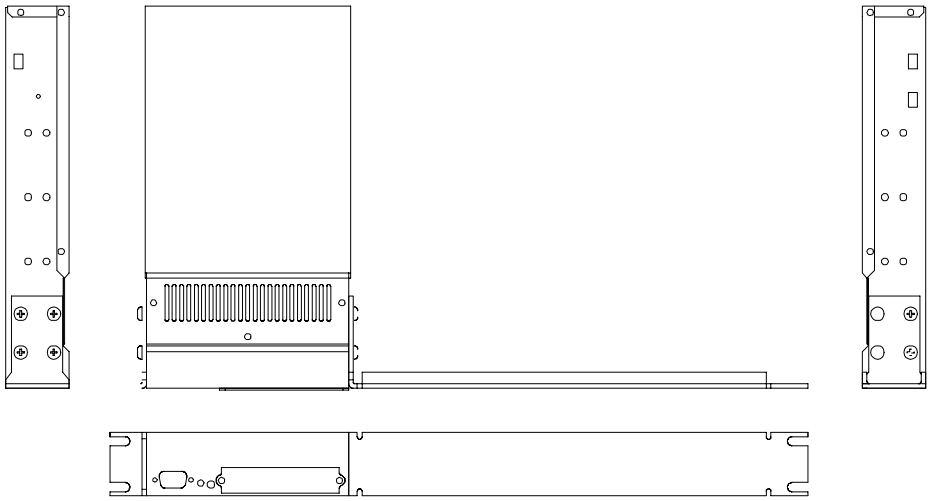


Surface Mount Kit, Part Number 320-100375		
Qty	Part Number	Description
2	306-100079	Mounting Flange
6	500-000566	Screw, 6-32 x 3/8, Pan Head, Black Ox, CRES

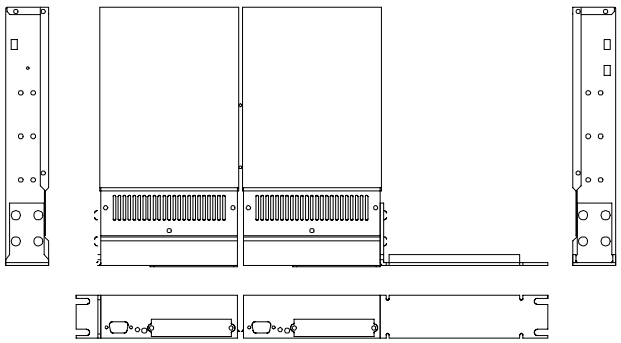
Rack Mounting



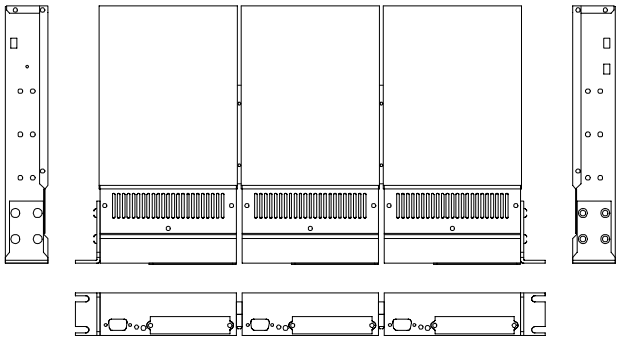
Rack mounting the Digital Audio Machine is as simple as attaching top and bottom connecting plates to the sides (if more than one unit is to be connected together) and then adding the appropriate length rack mount ears, as shown in the drawings that follow.



Rack Mount Kit, 1 Unit, Part Number 320-100372		
Qty	Part Number	Description
1	306-100007	Mounting Ear, Short
1	306-100083	Mounting Ear, Long
8	500-000540	Screw, 10-32 x ¼, Pan Head, Black Ox, CRES



Rack Mount Kit, 2 Unit, Part Number 320-100373		
Qty	Part Number	Description
1	306-100007	Mounting Ear, Short
1	306-100082	Mounting Ear, Medium
1	306-100080	Connecting Plate, Top
1	306-100081	Connecting Plate, Bottom
2	500-000565	Screw, 4-40 x 1, Pan Head, Black Ox, CRES
6	500-000564	Screw, 6-32 x 3/8, Flat Head, Black Ox, CRES
8	500-000540	Screw, 10-32 x ¼, Pan Head, Black Ox, CRES



Rack Mount Kit, 3 Unit, Part Number 320-100374		
Qty	Part Number	Description
2	306-100007	Mounting Ear, Short
2	306-100080	Connecting Plate, Top
2	306-100081	Connecting Plate, Bottom
4	500-000565	Screw, 4-40 x 1, Pan Head, Black Ox, CRES
12	500-000564	Screw, 6-32 x 3/8, Flat Head, Black Ox, CRES
8	500-000540	Screw, 10-32 x ¼, Pan Head, Black Ox, CRES

Specifications

Audio

DAC Resolution:	16 bits
Deviation from Linear phase:	+/-0.5dB
Total Harmonic Distortion:	0.003%
Dynamic Range (A-weighted):	94dB
Inter-channel Isolation:	90dB
Interchannel Gain Mismatch:	0.1dB
Frequency Response:	10 to 20 Khz +/- 0.1 dB
Maximum Phase Non-Linearity:	5 degrees
Output Level:	Unbalanced, 4.07V P-P max (3.70 typical) into 20K
Analog Output Load:	10K Ohm Minimum, 100pF Maximum

Playback Time

Approximately 3 hours stereo from an optional internal 2GB drive.
Approximately 6 hours mono from an optional internal 2GB drive.
PC-Card Playback Times: Stereo WAV files require 10Mbytes/minute, mono require 5 Mbytes/minute.

Trigger Response Time

Less than 33 msec.

Power

15.0 VDC to 27.0 VDC at 1 Amp max using internal IDE hard drive.
8 VDC to 27.0 VDC at 1 Amp max using removable PC-Card.
Connector: 2.5 mm I. D., 5.5 mm O. D., 10 mm shaft length.
Adapter for 115 or 230 volts provided.
115/230 volts, 50/60 Hz, 30 W max.

Physical

5.5” x 1.75” x 11”
4 lbs
0^{o}C (32^{o}F) to 38^{o}C (100^{o}F), free air circulation.
PC-Card hard discs used above 27^{o}C (80^{o}F) require an external fan.
0-90% relative humidity, non-condensing
1g max Vibration (with internal IDE drive)
10 g max Vibration (with removable PC-Card Hard Disc)
20 g max Vibration (with removable Flash Card)

Switches and Indicators

Front panel test button.
Front panel bi-color LED.
Side mounted slide switch for ground lift.
Side mounted slide switch for input type: contact/voltage.

Connectors

Front Panel DB-9M serial I/O connector.
Rear Panel DB-37F parallel and serial I/O connector.
Rear Panel RCA type Phono connectors for S/PDIF output, left and right audio.
Rear Panel Barrel connector (2.5 mm x 5.5 mm x 10 mm) for power.

Part Numbers

Digital Audio Machine, 115 VAC, Part Number 320-100116
Digital Audio Machine, 230 VAC, Part Number 320-100421
Flush Mounting Bracket Kit, Part Number 320-100375
Rack Mounting Bracket Kit, 1 Unit, Part Number 320-100372
Rack Mounting Bracket Kit, 2 Unit, Part Number 320-100373
Rack Mounting Bracket Kit, 3 Unit, Part Number 320-100374
Mating Connector and Housing for DB-37F, Solder Cup, Part Number 320-100376
PC-Card Media – contact factory

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